Newcomer Innovation in Work-Teams: The Effects of Performance Optimism and Newcomer Assertiveness

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Most of the theoretical and empirical work on newcomers views them as targets, rather than sources, of influence. This is not surprising given that newcomers often experience a great deal of stress. However, under certain conditions newcomers may be able to produce innovation in the group they enter. The present study examined two potentially important determinants of such innovation: (1) the group's optimism regarding its future performance and (2) the newcomer's assertiveness. Three-person groups (composed of a commander and two subordinates) completed three work shifts on a computer-based air-surveillance task. After the second shift, groups received feedback designed to induce low, moderate, or high performance optimism for the third shift. Then, one of the subordinates was replaced by a (confederate) newcomer who, using either an assertive or non-assertive behavioral style, suggested a new strategy for the last shift. As predicted, groups' receptivity to the newcomer's suggestion varied negatively with performance optimism and positively with newcomer assertiveness.

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1.0 INTRODUCTION

Companies such as Proctor and Gamble and General Foods were among the first to start using work groups in the United States in the 1960's (Gibson & Kirkman, 1999). Since then, work groups have become an increasingly important aspect of organizational life, and more and more organizations use such groups to perform some of their most critical tasks (e.g., Hackman, 1998, Gibson & Kirkman, 1999). There are several reasons why collaborative work can be beneficial. For example, work groups often possess diverse skills and abilities, can apportion responsibilities to meet new task demands, and can motivate their members to work hard. Researchers attribute the increased use of work groups to the fact that they are often linked to positive outcomes. For example, work groups have been associated with high levels of productivity (Banker, Field, Schroeder, & Sinha, 1996), work quality (e.g., Cohen & Ledford, 1994), and job satisfaction (Cordery, Mueller, & Smith, 1991).

However, other researchers suggest that work groups often fail to live up to their potential (Hackman, 1998). Steiner (1972) attributed this failure to process loss due to motivational and response coordination problems. More recently, Hackman (1998) outlined several mistakes managers sometimes make that contribute to process loss. Among these are using groups for tasks better suited to individuals, failing to provide the group with the support it needs to operate effectively within the organization, and assuming that the members already possess the skills and abilities they need to work well in groups.

An additional factor that can lead to process loss is personnel turnover. Turnover, defined as the entry of new members and/or the exit of old members (Levine & Choi, 2004), has been studied both at the organizational and small group level, and research has suggested that turnover is more or less disruptive to performance depending on the conditions under which it occurs. For example, research has shown that negative effects of turnover on team performance are particularly strong when the rate of turnover is greater than usual (Trow, 1960). Furthermore, teams tend to perform worse following turnover when the person entering the team has low rather than high ability, and this effect is stronger when the newcomer has high rather than low status (Levine & Choi, 2004). Finally, changes in team membership can make it risky for members to rely on each other's knowledge, and consequently turnover has been shown to be especially disruptive in teams that rely heavily on transactive memory systems (Moreland & Argote, 2003; Moreland, Argote, & Krishnan, 1998).

Although this research has provided important information about the negative consequences of turnover, the conditions under which turnover can have a positive impact on group performance have received little attention (for exceptions, see Levine, Choi, & Moreland, 2003; Choi & Levine, 2004). For example, one way in which turnover can improve performance is by producing the exit of unproductive members. Another way in which turnover can improve performance is by producing the entry of new members who possess valuable skills and abilities and who are motivated to improve the group's effectiveness through innovation, defined as "the intentional introduction and application … of ideas, processes, products, or procedures, new to the relevant unit of adoption, designed to significantly benefit the individual, the group, organization, or wider society" (West & Farr, 1990).

1.1 NEWCOMERS AS AGENTS OF CHANGE

The entry of new members raises the issue of how they will be socialized into the group. Models of group socialization focus mostly on newcomers as passive recipients of influence, emphasizing newcomers' susceptibility to oldtimers' efforts to shape their attitudes and behaviors (Moreland & Levine, 1982). This focus is not surprising given the stress that new members of a group typically experience (Moreland & Levine, 1989). Because new members often have unrealistic expectations about what being a group member entails, they may experience reality shock. Furthermore, newcomers often do not know other members of the group, have low status and power, lack task-relevant knowledge/skills, and are numerical minorities. As a consequence, newcomers are often especially susceptible to influence from the oldtimers (Levine & Moreland, 1999; Levine, Moreland, & Hausmann, 2005). However, newcomers are not invariably passive recipients of influence (Levine & Moreland, 1985; Levine, Moreland, & Choi, 2001). Research and theory suggest that, in some cases, newcomers can produce change (innovation) in the groups they enter. How effective they are depends on (a) characteristics and behaviors of the newcomers and (b) characteristics of the group (Levine et al., 2003).

Newcomers' characteristics and behaviors affect innovation via their impact on newcomers' motivation to introduce change, ability to generate ideas, and ability to persuade oldtimers to accept their ideas. Newcomers' motivation to introduce change is affected by their commitment to the group, belief that they have the ability to generate ideas for solving group problems, and perception that their innovative efforts will be rewarded. Newcomers' ability to generate ideas depends on factors such as their creativity level and style, cognitive ability, and task-relevant knowledge and skills. Finally, newcomers' ability to persuade oldtimers to accept

their ideas depends on such factors as their external social status, behavioral style, and use of effective impression management tactics.

Several characteristics of the group can also influence the extent to which newcomers can produce innovation. These include group openness, group staffing level, group development, group leadership, and group performance. Open groups are likely to be more receptive to newcomer influence than are closed groups; groups in early stages of development are likely to be more receptive than are groups in later stages of development; and understaffed groups are likely to be more receptive than are adequately staffed groups. Moreover, groups with democratic leaders are likely to be more receptive than are groups with autocratic leaders, and groups that have performed poorly are likely to be more receptive than are groups that have performed well.

1.2 PRESENT EXPERIMENT

This experiment investigated the extent to which newcomers' ability to produce change in the group they are entering is affected by (a) the group's performance optimism and (b) the newcomer's assertiveness.

1.2.1 Performance Optimism

In several studies, group members have received feedback about their previous performance and then have been asked about their expectancy for future performance. Results have indicated that past performance has a substantial impact on such expectancy, such that groups that have failed

expect their future performance to be low, whereas groups that have succeeded expect their future performance to be high (e.g., Riggs & Knight, 1994; Jung & Sosik, 2003). What consequences might such performance optimism have for a group? One important consequence may be group members' inclination to change their current task strategy. A group that expects success should have little inclination to change its current strategy. In contrast, a group that expects failure should have greater inclination to change this strategy. The group's inclination to change its strategy should in turn affect its receptivity to newcomers' efforts to produce innovation.

Some evidence suggests that group performance does indeed affect group receptivity to newcomer innovation, presumably because of its impact on members' performance optimism. In an early study, Ziller and Behringer (1960) introduced newcomers into three-person groups that had experienced either success or failure on a dot-estimation task. The newcomer was a confederate who knew the correct answer to the problem as well as the correct method for arriving at that answer. Results indicated that the newcomer was more influential when joining a failing group than a succeeding group. Two potentially important features of the Ziller and Behringer study are worth noting. First, the group's task after the newcomer's entry was much more difficult than its task before entry. Second, the newcomer provided objectively correct answers as well as the arithmetic process for obtaining these answers. These two features made it highly likely that the group would accept the newcomer's suggestion, and hence the experiment did not provide a strong test of a newcomer's ability to produce innovation.

Choi and Levine (2004) recently conducted an experiment that provided a stronger test of newcomers as innovation agents. These researchers introduced newcomers into three-person teams that had worked on a network-based air-surveillance task that required information search

and exchange. After the first shift, one participant was replaced by a newcomer (a confederate) who suggested a strategy change during an e-mail communication session before the team began their second shift. Choi and Levine manipulated both the performance history of the group and whether or not the group had a choice in determining its initial task strategy. In contrast to Ziller and Behringer (1960), Choi and Levine used a paradigm in which the team worked on the same task before and after the newcomer's entry. Furthermore, rather than providing objectively correct answers and the procedure for obtaining these answers, the newcomer in the Choi and Levine study suggested a plausible strategy that he said "might" work better than the strategy the group had used on the first shift. Results indicated that the newcomer's effectiveness in gaining acceptance for his suggestion depended on both the group's performance history and degree of choice in selecting its initial strategy. Specifically, low performance groups were more likely to accept the newcomer's suggestion than were high performance groups, and groups that had been assigned their initial strategy were more likely to accept the newcomer's suggestion than were groups that had chosen their initial strategy.

In the present experiment, which contained three work shifts, all groups received information indicating that they failed on the first shift. After the second shift, groups received information indicating that their performance improved but did not reach a pre-determined success criterion. Groups in the low performance optimism condition were informed that their performance improved slightly; groups in the moderate performance optimism condition were informed that their performance improved moderately; and groups in the high performance optimism condition were informed that their performance improved substantially.

This design extends Choi and Levine's (2004) assessment of the effect of group performance on receptivity to newcomer innovation in two major ways. First, it provides a more

subtle test of the effect of group performance, in that groups in this experiment experienced various levels of improvement after failure, but no groups actually experienced success. Second, because the design included three levels of performance, it provides the opportunity to test whether performance and receptivity to newcomer innovation vary in a linear fashion.

1.2.2 Assertiveness

Communication style as a predictor of group members' ability to exert influence has received some attention in the literature on team performance. This work has been summarized by Jentsch and Smith-Jentsch (2001) who identified three distinct communication styles. One style, *passivity*, is manifested by questions or vague statements. Because of its vagueness, passivity typically fails to attract the attention of other group members. A very different style is *aggressiveness,* which is manifested by direct statements that signal disregard for other group members' feelings, needs, or goals. Because of the hostility implied by aggressiveness, it is likely to elicit negative emotional reactions in targets, which in turn may reduce its effectiveness in producing influence. Finally, Jentsch and Smith-Jentsch (2001) discuss *assertiveness*, which is manifested by clear statements that do not contain hostility. Of the three communication styles, assertiveness has been found to be most effective in producing influence (Jentsch & Smith-Jentsch, 2001). For example, co-pilots have reported preventing airplane mishaps by applying assertiveness skills learned in cockpit resource management programs (Salas, Fowles, Stout, Milanovich, & Prince, 1999). From these and other data, Jentsch and Smith-Jentsch (2001) argue that assertive behavior can have positive consequences for air crews as well as for other groups that work in stressful environments (e.g., medical teams, police and firefighters, air traffic controllers).

The notion that communication style is an important determinant of social influence is consistent with the minority influence literature, although minority influence researchers use the term "behavioral style." In fact, Moscovici (1976, 1985) argued that behavioral style is *the* crucial factor in the ability of minorities to influence majorities (and vice versa). Minority influence research is relevant to newcomer innovation because newcomers are often numerical minorities in the groups they join.

Moscovici (1985) discussed three behavioral styles relevant to our present purposes: autonomy, consistency, and rigidity. An *autonomous* behavioral style is manifested by independence in opinions and behaviors as well as objectivity. Independence implies strong convictions and character, whereas objectivity implies unbiased information processing. According to Moscovici, a highly autonomous minority is more effective in producing influence than is a less autonomous one, because its behavior is attributed to internal rather than external factors (Moscovici & Nemeth, 1974). For example, a minority that acts under the coercion of others is seen as not believing in its position, and consequently its influence is negligible.

A *consistent* behavioral style is manifested by agreement among minority members, as well as consistency in their position over time. According to Moscovici, such consistency causes the majority to attribute the minority's position to high confidence. Consistent (and confident) behavior is more effective in producing influence than is inconsistent behavior, because it causes the target to see the minority position as a clear alternative and forces the target to consider the position carefully.

A *rigid* behavioral style is manifested by extreme and inflexible behavior that indicates refusal to make concessions, as well as insensitivity to the reactions of others. Research suggests that a rigid behavioral style is often less effective in changing others' opinions than is a flexible

behavioral style (e.g., Nemeth, Swedlund, & Kanki, 1974). This is particularly true for direct opinion change (i.e., on the particular topic under discussion). Mugny (1982) offers evidence that a rigid style can produce indirect opinion change under some conditions (i.e., on topics related to the one under discussion).

Assertiveness, as defined above, can be viewed as an amalgamation of the two behavioral styles that Moscovici views as leading to influence. That is, assertiveness involves both high autonomy and high consistency. On the basis of Moscovici's (1985) discussion, it is reasonable to assume that such a behavioral style will increase a communicator's persuasive power.

1.2.3 Design and Hypotheses

In this experiment, groups were randomly assigned to six conditions in a 2 (newcomer assertiveness: non-assertive/assertive) X 3 (performance optimism: low/moderate/high) between-subjects design. The present methodology was similar but not identical to that used by Choi and Levine (2004). Three participants worked together for three shifts on a network-based air-surveillance task involving information search and exchange. After the first shift, all groups were given feedback indicating that their performance on the task was poor. After the second shift, groups received feedback designed to induce low, moderate, or high performance optimism for the third shift.

A newcomer was then introduced into the group. This person suggested a major change in the strategy the group was using on the air-surveillance task. In making the suggestion, the newcomer used either an assertive or a non-assertive behavioral style.

We had three hypotheses. First, we predicted a main effect of performance optimism, such that groups' receptivity to the newcomer's suggestion would vary negatively with their

performance optimism (i.e., lower optimism would produce more receptivity). Second, we predicted a main effect for newcomer assertiveness, such that groups with an assertive newcomer would be more receptive to the newcomer's suggestion than would groups with a non-assertive newcomer. Finally, we predicted that the assertiveness manipulation would have less impact on receptivity to the newcomer's suggestion in groups where members had very clear performance expectations (i.e., high or low optimism) than in groups where members had more ambiguous expectations (i.e., moderate optimism).

2.0 METHOD

2.1 PARTICIPANTS

Two hundred forty three male undergraduates at University of Pittsburgh participated in the experiment in partial fulfillment of a course requirement for introductory psychology. Participants were randomly assigned to 3-person groups, and groups were randomly assigned to six experimental conditions. This procedure yielded a total of 81 groups (low optimism/non-assertive newcomer: n = 13; low optimism/assertive newcomer: n = 12; moderate optimism/non-assertive newcomer: n = 13; moderate optimism/assertive newcomer: n = 14; high optimism/non-assertive newcomer: n = 14; high optimism/assertive newcomer: n = 15).

2.2 EXPERIMENTAL TASK

Group members worked on a network-based air-surveillance task. This computer simulation involves the collection, distribution, and processing of a large amount of information under time pressure. Participants in each group were assigned to one of two roles. One person served as the commander of the group, and two people served as specialists. During the task, multiple planes flew through a simulated airspace that the group was monitoring. When each plane entered the airspace, eight plane characteristics were available to the group. The specialists' job was to

monitor and relay information about the characteristics to the commander, who then used the information to assign threat levels to the planes using a formula. Because the characteristics of the planes changed over time, the specialists had to monitor the planes' characteristics on a continuous basis, and the commander had to update the planes' threat levels frequently. Participants' actions using the computer network were automatically recorded and saved.

2.3 PROCEDURE

Participants were brought into the laboratory in groups of three and given a brief introduction to the study, during which they were told that they would work as members of an air-surveillance team at a military base. Further, they were told that they would have an opportunity to make money based on their performance and that the team's composition would change later in the session to simulate the turnover often experienced by real teams. After the introduction, participants were randomly assigned to the role of either commander or specialist and trained on the task for approximately 30 minutes.

During the training, the specialists were taught how to use their computers to look up information about eight characteristics of the planes. These characteristics were: Airspeed (in miles per hours), Altitude (in feet), Angle (degree of the plane's ascent or descent), Corridor (whether the plane was in, outside, or on the edge of its authorized flight path), Direction (the size, in degrees, of the course adjustment the plane would have to make in order to fly directly over the air base), Radar (weather, none, jamming), Range (the plane's distance, in miles, from the air base), and Weapons Arming (low ready, medium ready, high ready). When the specialists looked up the information for any given characteristic, they were given the raw value of that

characteristic. For example, when checking Airspeed, a specialist might see 510 mph. The specialist then used a table to convert that raw value into a parameter value (for Airspeed, < 435 mph = 1; 436-570 mph = 2; > 570 mph = 3). The specialist then used the email function on his computer to transmit that parameter value (2 in this case) to the commander.

The commander was taught how to calculate and assign the threat value of each plane based on the information he received from the specialists. To do this, he first collected the parameter values for all eight characteristics of a plane. Next, he multiplied each parameter value by a weight (ranging from 1 to 6) reflecting the importance of the characteristic and added the resulting products to arrive at a threat value for the plane. Finally, he used his computer to assign a number of stars to the plane based on its threat value (1 star = low threat, 7 stars = high threat). After the training session, participants were allowed a five-minute practice session during which (a) the specialists looked up and transmitted information about one plane to the commander and (b) the commander used that information to calculate and assign a threat value to the plane.

Next, participants were told that the eight characteristics of each plane would be divided between the two specialists such that each specialist would be responsible for monitoring and reporting information about four. They then received a description of two strategies the group could consider in deciding how the characteristics should be divided. The “weight” strategy divided the characteristics on the basis of their importance in the commander’s threat formula. This strategy divided the characteristics such that each specialist was responsible for monitoring an equal number of more and less important characteristics. The “range” strategy divided the characteristics on the basis of the difficulty of monitoring them. This strategy divided the characteristics such that each specialist was responsible for monitoring an equal number of easy

and difficult characteristics. After receiving a description of the two strategies, the group was given 10 minutes to discuss the two strategies and select one.

The group then completed a 10-minute shift on the air surveillance task (Shift 1), using the strategy it selected. At the end of the shift, participants in all conditions were told that a score of 75% was considered good group performance and that their group had obtained a score of 53%. In addition, group members were told that, "in addition to being interested in seeing how groups perform on this task, we're interested in how people form impressions of people they're working with," and that, "because we are also interested in how those impressions might change over time, you will be asked to complete this questionnaire a couple of times during the experiment." They then completed a questionnaire on which they rated the other group members on assertiveness, self-confidence, expertise, arrogance, and motivation using 9-point Likert scales (1 = very low; 9 = very high).

Next, the groups completed a second 10-minute shift on the air surveillance task (Shift 2). At the end of the shift, the first independent variable was introduced. Groups in the low performance optimism condition received feedback indicating that they had improved only a few points, to a score of 57. In addition, they were told that, "We ran this experiment last semester, and very few, I'd say about 10%, of the groups with a score similar to yours succeeded on the third shift." Groups in the moderate performance optimism condition received feedback indicating that they had improved several points, to a score of 65. In addition, they were told that, "We ran this experiment last year, and about half of the groups with a score similar to yours succeeded on the third shift." Finally, groups in the high performance optimism condition received feedback indicating that they had improved many points, to a score of 73. In addition, they were told that, "We ran this experiment last year, and almost all, I'd say about 90%, of the

groups with a score similar to yours succeeded on the third shift." Participants then filled out a questionnaire in which they are asked about their expectation for their group's performance on the third shift (0-100). In addition, as filler items, they were also asked (a) how difficult they thought the task was, (b) how realistic they thought the task was, (c) how satisfied they were with their performance so far, and (d) how much they liked working with the group. All items were answered using 9-point Likert scales (e.g., 1 = very easy, 9 = very difficult).

After participants completed the questionnaire, they were informed that they would be eligible to earn money in the third shift. Specifically, they were told that if the group obtained a score of 75% or higher, each member would get $3.00. In addition, participants were told that the group's composition would change in the next shift. They were told that, "In real teams, old members sometimes leave the team, and new members sometimes join. In this experiment, we will simulate this by replacing specialist B with a new specialist, who has received individual training on the task, but has not yet worked as a part of a team." Specialist B was then taken to another room, and the newcomer (a confederate) was introduced to the group.

Before groups began the third shift, participants were given an emailing period, allegedly designed to give them a chance to get acquainted and talk about the task. At this point, the second independent variable was introduced. During the emailing period, the newcomer suggested a major strategy change. Specifically, he suggested that, instead of each specialist monitoring and reporting four characteristics for each plane, each specialist should monitor all eight characteristics of a given plane.

The non-assertive newcomer suggested his idea in the following way:

"I had an idea during training that I'm not sure about. Maybe each spec could do all 8 characteristics of a plane - spec A does the first, I do the second, and so on...?"

The assertive newcomer suggested his idea in the following way:

“I had an idea during training that I really think is good. Each spec should do all 8 characteristics of a plane - spec A does the first plane, I do the second one, and so on. Let's try it!”

After proposing his strategy, the newcomer let specialist A and the commander discuss the strategy and decide whether to accept or reject it.

Following the emailing period, group members were again asked to rate the other group members on assertiveness, self-confidence, expertise, arrogance, and motivation using 9-point Likert scales.

Finally, groups completed a final 10-minute shift (Shift 3), during which the newcomer assumed the role of a “typical” participant, monitoring and reporting plane characteristics using whatever strategy the group members had decided on. When the shift was over, participants completed a questionnaire regarding their general reactions to the experiment. They were then given feedback indicating that they earned $3.00, debriefed about the experiment, and dismissed.

3.0 DATA ANALYSIS

Data from eight groups were excluded due to suspicion about the purpose of the experiment and/or the identity of the newcomer. This left a total of 73 groups (low optimism/non-assertive newcomer: n = 12; low optimism/assertive newcomer: n = 12; moderate optimism/non-assertive newcomer: n = 12; moderate optimism/assertive newcomer: n = 12; high optimism/non-assertive newcomer: n = 13; high optimism/assertive newcomer: n = 12).

3.1 IMPACT OF STRATEGY DISCUSSION AND ACTUAL GROUP PERFORMANCE ON INNOVATION

Before the groups began working on the task, they engaged in a face-to-face discussion with the goal of deciding which strategy to use for monitoring and reporting plane characteristics. As expected on the basis of prior work (Choi & Levine, 2004), approximately half of the groups chose each of the two strategies (weight: 41%, range: 59%). All groups reached a decision about monitoring strategy within the time limit of 10 minutes (M = 5 minutes). Analyses revealed that there was no significant relationship between (a) either the length of discussion or the strategy chosen and (b) groups' subsequent acceptance/rejection of the newcomer's suggestion (for discussion length, r_{pb} = .03, *ns*; for strategy chosen, $\chi^2(1) = 2.06$, *ns*). In addition, analysis of groups' actual performance prior to newcomer entry revealed that there was no significant

relationship between this performance and groups' subsequent acceptance/rejection of the newcomer's suggestion (r_{pb} = .11, *ns*).

3.2 MANIPULATION CHECKS

As noted above, specialist B was replaced by the newcomer and hence was not present to consider the newcomer's strategy suggestion. For this reason, all of the following analyses were performed on the mean of specialist A's and the commander's responses to the manipulation check questions.

3.2.1 Performance optimism

The manipulation check for performance optimism was group members' prediction about their score on Shift 3. These predictions were obtained following Shift 2, prior to the newcomer's entry. As expected, a one-way ANOVA on responses to this question yielded a significant performance optimism effect, $F(2, 70) = 383.35$, $p < .01$ (M = 62.57 for low optimism, M = 73.83 for moderate optimism, M = 79.33 for high optimism). Follow-up contrasts using Duncan's new multiple range tests ($p < .05$) revealed that low optimism groups predicted significantly lower scores on Shift 3 than did moderate optimism groups, which in turn predicted significantly lower scores than did high optimism groups.

As discussed above, group members were asked additional filler questions about the experiment after Shift 2: (a) how difficult they thought the task was, (b) how realistic they thought the task was, (c) how satisfied they were with their performance so far, and (d) how

much they liked working with the group. Responses to these questions were analyzed using one-way ANOVAs. The difficulty and realism items did not yield significant effects due to the manipulation of performance optimism (overall *M*s = 6.16 and 5.79 for difficulty and realism, respectively). A significant performance optimism effect was obtained for satisfaction, $F(2, 70) = 21.11$, $p < .01$ ($M = 4.15$ for low performance optimism, $M = 5.42$ for moderate performance optimism, and $M = 6.24$ for high performance optimism). Follow-up contrasts using Duncan's new multiple range tests ($p < .05$) revealed that low optimism groups were significantly less satisfied with their performance than were moderate optimism groups, which in turn were significantly less satisfied than were high optimism groups. A significant performance optimism effect was also obtained for working with the group, $F(2, 70) = 8.80$, $p < .01$ ($M = 5.69$ for low performance optimism, $M = 6.81$ for moderate performance optimism, and $M = 6.76$ for high performance optimism). Follow-up contrasts using Duncan's new multiple range tests ($p < .05$) revealed that members of low optimism groups liked working with their group significantly less than did members of both moderate and high optimism groups.

3.2.2 Assertiveness

The manipulation check for newcomer assertiveness was group members' rating of the newcomer on the assertiveness item following Shift 2, after the emailing period. Responses to this item were analyzed using a 2 (newcomer assertiveness: assertive/non-assertive) X 3 (performance optimism: low/moderate/high) ANOVA. This analysis revealed two main effects. First, there was a newcomer assertiveness main effect, such that the non-assertive newcomer was perceived as being less assertive than the assertive newcomer, $F(1, 67) = 3.96$, $p = .05$ (*Ms* = 6.54 and 7.03, respectively). Second, there was a performance optimism main effect, $F(2, 67) =$

5.97, $p < .01$ ($M = 7.15$ for low performance optimism, $M = 7.00$ for moderate performance optimism, and $M = 6.22$ for high performance optimism). Follow-up contrasts using Duncan's new multiple range tests ($p < .05$) revealed that the newcomer was seen as more assertive in both the low and moderate performance optimism condition than in the high performance optimism condition.

As noted above, group members also were asked to rate the newcomer on four additional characteristics, namely arrogance, confidence, motivation, and expertise. These ratings were submitted to 2 (newcomer assertiveness: assertive/non-assertive) X 3 (performance optimism: low/moderate/high) ANOVAs.

No significant effects were obtained on the arrogance item (overall $M = 3.01$). A main effect of assertiveness was obtained on the confidence item, such that the assertive newcomer was perceived as more confident than the non-assertive newcomer, $F(1, 72) = 5.62$, $p < .05$ (Ms = 7.21 and 6.78, respectively). This effect, however, was qualified by a significant assertiveness x performance optimism interaction, $F(2, 67) = 7.13$, $p < .01$. Follow-up contrasts using Duncan's new multiple range tests ($p < .05$) revealed that moderate optimism groups perceived the assertive newcomer as more confident than the non-assertive newcomer ($M = 7.63$ for assertive, $M = 6.25$ for non-assertive). Comparisons in the high optimism groups ($M = 6.83$ for assertive; $M = 6.77$ for non-assertive) and low optimism groups ($M = 7.17$ for assertive; $M = 7.33$ for non-assertive) were not significant. An assertiveness x performance optimism interaction was also obtained on the motivation item, $F(2, 67) = 7.11$, $p < .01$. Follow-up contrasts using Duncan's new multiple range tests ($p < .05$) revealed that moderate optimism groups perceived the assertive newcomer as more motivated than the non-assertive newcomer ($M = 7.67$ for assertive, $M = 6.38$ for non-assertive). Comparisons in the high optimism groups ($M =$

6.71 for assertive; M = 6.88 for non-assertive) and low optimism groups (M = 6.88 for assertive; M = 7.17 for non-assertive) were not significant. Finally, a main effect of performance optimism was obtained on the expertise item, $F(2, 67) = 5.89$, $p < .01$ (M = 6.85 for low performance optimism, M = 6.69 for moderate performance optimism, and M = 5.69 for high performance optimism). Follow-up contrasts using Duncan's new multiple range tests ($p < .05$) revealed that the newcomer was seen as having more expertise in the low and moderate optimism conditions than in the high optimism condition.

3.3 NEWCOMER INNOVATION

The computer log files from the emailing discussion period were examined by two independent coders to determine whether oldtimers (i.e., specialist A and the commander) accepted or rejected the newcomer's suggestion. Coders agreed on 71 of the 73 cases, and disagreement was resolved through discussion. Inspection of the log files from Shift 3 revealed that all groups that accepted the newcomer's suggestion used this strategy during that shift, whereas all groups that rejected the suggestion continued to use the strategy that they had used on earlier shifts.

The coding of the oldtimers' responses to the newcomer's suggestion yielded a dichotomous dependent variable that was coded as 1 for acceptance and 0 for rejection of the newcomer's suggestion. This variable was entered into a step-wise logistic regression analysis to test the hypothesized main effects of performance optimism and assertiveness and the interaction of these two variables.

In the first step of the regression analysis, performance optimism was entered as a predictor of newcomer innovation. Performance optimism was operationalized as the probability

estimate, given to groups after Shift 2, that they would reach the success criterion on the third shift (low optimism: 10%; moderate optimism: 50%; high optimism: 90%). Results of this analysis revealed a main effect for performance optimism, $\chi^2(1) = 11.70$, $p < .01$. Seventy nine percent of groups in 10% condition accepted the newcomer's strategy suggestion, compared to 63% in the 50% condition and 32% in the 90% condition. Further, this main effect indicated that the likelihood of groups accepting the newcomer's suggestion varied in a linear fashion with performance optimism. The presence of a linear trend, however, does not exclude the possibility that a higher-order trend may account for additional variance in acceptance of the newcomer's suggestion. To test this possibility, a quadratic predictor was computed by squaring performance optimism. To eliminate multicollinearity due to the multiplication of terms (i.e., non-essential multicollinearity), performance optimism and higher-order terms/interactions involving this variable were centered prior to analysis. Results of this analysis revealed that the quadratic term did not improve the prediction of newcomer innovation over and above the model including only the linear term, $\chi^2(1) = .17$, *ns*.

In the next step of the regression analysis, newcomer assertiveness was entered as a predictor of newcomer innovation. This variable was coded as 1 for assertive and 0 for non-assertive. Results revealed that adding newcomer assertiveness improved the prediction of innovation over and above the linear contribution of performance optimism, $\chi^2(1) = 10.51$, $p < .01$. Seventy five percent of groups in the assertive condition accepted the newcomer's strategy suggestion, compared to 41% in the non-assertive condition.

Finally, in the last step of the regression analysis, an interaction term was computed and entered as a predictor of newcomer innovation. This term was computed by multiplying performance optimism and newcomer assertiveness. Again, performance optimism and the

interaction term were centered prior to the analysis. Results revealed that adding the interaction term did not improve the prediction of newcomer innovation over and above the contributions of performance optimism and newcomer assertiveness, $\chi^2(1) = .02$, *ns*.

3.3.1 Inclusion of the Newcomer

To assess the extent to which oldtimers included the newcomer in their discussion during the emailing period, the proportion of messages oldtimers directed to the newcomer after he suggested his strategy (newcomer messages/total messages) was calculated for each group. These proportions were arcsine transformed and analyzed using a 2 (newcomer assertiveness: assertive/non-assertive) X 3 (performance optimism: low/moderate/high) analysis of covariance, where the proportion of messages oldtimers directed to the newcomer before he suggested his strategy (also arcsine transformed) served as the covariate. Results revealed a main effect of assertiveness, $F(2, 66) = 5.12$, $p < .05$ ($M = .41$ for assertive; $M = .50$ for non-assertive), such that oldtimers directed more messages to the non-assertive newcomer than to the assertive newcomer.

4.0 DISCUSSION

The purpose of this experiment was to examine how a group's optimism regarding its future performance and the assertiveness of a newcomer proposing a new task strategy affected the group's receptivity to the newcomer's innovation attempt. A laboratory experiment was conducted using a computer simulation in which three-person groups, consisting of a commander and two specialists, monitored and assigned threat values to multiple planes flying through a simulated airspace. Groups completed three shifts on the simulation. After the first shift, all groups received feedback indicating that they had failed to reach a pre-determined success criterion. After the second shift, groups were given feedback indicating that they had improved a small, moderate, or large amount and that their probability of reaching the success criterion was low, moderate, or high, respectively. Before groups began working on the third shift, one of the specialists was replaced by a confederate newcomer who, during an emailing period, suggested a new strategy for performing the group task. This suggestion was made in either an assertive or a non-assertive manner. Groups' acceptance or rejection of the strategy served as a behavioral measure of their receptivity to newcomer innovation.

Three hypotheses were offered. First, it was predicted that groups' receptivity to the newcomer's suggestion would vary negatively with their performance optimism. Second, it was predicted that groups with an assertive newcomer would be more receptive to the newcomer's suggestion than would groups with a non-assertive newcomer. Third, it was predicted that the

assertiveness manipulation would have less impact on receptivity to the newcomer's suggestion when groups had very clear performance expectations (i.e., high or low optimism) than when they had more ambiguous expectations (i.e., moderate optimism).

4.1 PERFORMANCE OPTIMISM

When asked how optimistic they were about their performance in the third shift, participants in the low optimism condition expressed lower optimism than did participants in the moderate optimism condition, who in turn expressed lower optimism than did participants in the high optimism condition. This suggests that our manipulation of performance optimism was successful.

What consequence did performance optimism have groups' for receptivity to newcomer innovation? Prior research has shown that successful groups are less receptive to newcomer innovation than are failing groups (Choi & Levine, 2004; Ziller & Behringer, 1960). But what if groups' prior performance did not differ in such a dramatic way? What if failing groups were merely induced to feel more or less optimistic about their future performance? This was the case in the present experiment. All groups failed to reach the success criterion, and some groups improved more than others. However, none actually experienced success. Performance optimism was manipulated by providing groups with one of three levels of feedback following failure: a 10% chance of reaching the success criterion (low optimism), a 50% chance of reaching the criterion (moderate optimism), or a 90% chance of reaction the criterion (high optimism). Analyses showed, as predicted, that receptivity to newcomer innovation varied as a negative linear function of performance optimism. Thus, experiencing different levels of optimism after

failure was enough to produce significant differences in groups' receptivity to newcomer innovation.

In addition to affecting participants' expectations about their future performance, the performance optimism manipulation also affected how satisfied they were with their past performance and how much they liked working with the group. These findings are consistent with prior evidence indicating that higher group performance leads to greater satisfaction with and attraction to the group (e.g., Riggs & Knight, 1994; Snyder, Lassegard, & Ford, 1986).

The performance optimism manipulation also affected participants' ratings of the newcomer's assertiveness and expertise. Specifically, the newcomer was seen as less assertive and less expert in the high optimism condition than in the low and moderate optimism conditions. It may be the case that highly optimistic participants have a negative view of newcomers who have the "audacity" to suggest changes in the group's strategy.

4.2 NEWCOMER ASSERTIVENESS

When asked how assertive they thought the newcomer was, participants rated the assertive newcomer as more assertive than the non-assertive newcomer. This suggests that our manipulation of newcomer assertiveness was successful.

What consequence did newcomer assertiveness have for groups' receptivity to newcomer innovation? Because no research has directly examined this issue, our prediction was based on extrapolation from research on related topics. Based on research on behavioral style in the minority influence literature and communication style in the team performance literature, we predicted that groups would be more receptive to an assertive newcomer's suggestion than to a

non-assertive newcomer's suggestion. Analyses showed, as predicted, that receptivity to newcomer innovation varied positively with newcomer assertiveness. This result is interesting for two reasons. First, most of the research on how behavioral style affects minority influence has employed attitude change paradigms in which there is no interaction between the majority and the minority. Our results extend this work by showing that a particular kind of minority, namely newcomers, can influence interacting groups working on involving tasks. Turnover in natural groups necessarily involves the entry of newcomers, who are usually viewed as recipients rather than sources of influence. Our results show that newcomers can, if they communicate their ideas in an assertive manner, produce change in how work groups operate. Second, our results demonstrate that seemingly small changes in the assertiveness of a newcomer can have substantial effects on the behavior of oldtimers. The manipulation of newcomer assertiveness in this study was subtle, consisting of minor changes in the wording of the newcomer's message (e.g., "should" vs. "could"). Nevertheless, 75% of the groups accepted the strategy suggestion from the assertive newcomer, whereas only 41% of the groups accepted the strategy suggestion from the non-assertive newcomer. In other words, very small changes in assertiveness nearly doubled the acceptance rate.

The newcomer assertiveness manipulation also affected the extent to which oldtimers communicated with the newcomer during the emailing period before the last shift. Specifically, after controlling for the number of messages sent to the newcomer before the strategy suggestion, our analysis showed that oldtimers sent more messages to the non-assertive newcomer than to the assertive newcomer after the strategy suggestion. This finding indicates that the way in which a newcomer presents his or her message can influence oldtimers' judgments about how to respond to the newcomer. In the present study, when the message was

presented in a non-assertive manner, oldtimers may have felt that the newcomer could be persuaded to adopt their existing strategy. In contrast, when the message was presented in an assertive manner, oldtimers may have felt that the newcomer was not amenable to persuasion. These differing perceptions, in turn, may have produced the communication differences we obtained.

In addition to affecting group members' ratings of the newcomer's assertiveness, the assertiveness manipulation also affected their perceptions of the newcomer's confidence. Not surprisingly, the assertive newcomer was seen as more confident than was the non-assertive newcomer. This main effect, however, was qualified by an assertiveness x performance optimism interaction. Additional analyses of this interaction revealed that moderate optimism groups, but not high or low optimism groups, perceived the assertive newcomer as more confident than the non-assertive newcomer. An assertiveness x performance optimism interaction was also obtained on perceptions of the newcomer's motivation, which was based on exactly the same pattern of means. Interestingly, these interactions mirror the predicted performance optimism x assertiveness interaction that was predicted, but not obtained, on groups' receptivity to newcomer innovation. That is, the assertiveness manipulation had less impact on oldtimers' perceptions of the newcomer in groups where performance expectations were clear (i.e., high or low optimism) than in groups where expectations were more ambiguous (i.e., moderate optimism). A possible explanation for these findings is that groups with clear performance expectations feel that their future performance will not be affected by the addition of a new member, whereas groups with ambiguous performance expectations feel that their performance will be affected. If so, it is not surprising that moderate optimism groups were more sensitive to the characteristics of the newcomer than were low or high optimism groups.

4.3 LIMITATIONS AND FUTURE DIRECTIONS

In this experiment, we found a negative relationship between performance optimism and receptivity to innovation. However, it is possible that the effect of performance optimism on groups' receptivity to newcomer innovation may be more complex than our results suggest. For example, if performance optimism were extremely low, much lower than in this experiment, then group members might believe that they would not succeed no matter what they did (i.e., experience learned helplessness). In that case, they might be unwilling to accept any suggestion for strategy change and instead attempt to execute their current strategy with increased vigor (Gersick & Hackman, 1990). It is also possible that if performance optimism were extremely high, then group members might believe that they were invulnerable and would not fail no matter what they did. In that case, they might be willing to try almost anything and hence would be highly susceptible to (at least certain types of) newcomer innovation.

In this experiment, we also found a positive relationship between newcomer assertiveness and receptivity to newcomer innovation. However, it is possible that the effect of newcomer assertiveness on groups' receptivity to innovation may be more complex than our results suggest. For example, our groups always had male members. Research has found gender differences in judgments of male and female communicators on the basis of assertiveness. Specifically, Carli (1990) found that when a female communicator behaved assertively, male participants perceived her as less trustworthy and less likable than when she behaved tentatively. When a male communicator behaved assertively, however, male participants perceived him as more trustworthy and likable than when he behaved tentatively. Female participants did not differ in their perceptions of male and female communicators. This research may be relevant to newcomer innovation, because perceptions of trustworthiness may mediate the relationship between

assertiveness and receptivity to newcomer innovation. If an assertive behavioral style leads males to perceive a female newcomer as untrustworthy, then this may negatively impact their willingness to accept her strategy suggestion.

Finally, because the present study employed only two levels of assertiveness, we could not address the possibility of a curvilinear relationship between the newcomer's assertiveness and groups' receptivity to innovation. Recently, Ames and Flynn (2005) found a curvilinear relationship between assertiveness and perceived leadership potential. Their results showed that very high or low assertiveness reduced a target's perceived leadership potential. To the extent that these findings can be extrapolated to receptivity to newcomer innovation, very high levels of newcomer assertiveness might not increase groups' receptivity to innovation.

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